

U.S. HOUSE OF REPRESENTATIVES  
COMMITTEE ON SCIENCE AND TECHNOLOGY

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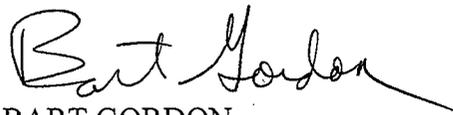
July 17, 2009

Mr. Norman Augustine  
Chairman, Review of U.S. Human Space Flight Plans Committee  
C/O  
NASA Headquarters  
Office of Program Analysis and Evaluation  
300 E. Street, SW  
Washington, DC 20546

Dear Mr. Augustine:

In response to your invitation, I am submitting the enclosed statement to the Review of Human Space Flight Plans Committee. It discusses the human space flight-related policies and provisions of the NASA Authorization Acts of 2005 and 2008, which represent the current congressional consensus on the nation's human space flight and exploration plans and programs. I would be happy to meet with you to discuss these matters in further detail if you wish to do so.

Sincerely,



BART GORDON  
Chairman

/Attachment

**Statement to the Review of U.S. Human Space Flight Plans Committee**

**Hon. Bart Gordon  
Chairman, Committee on Science and Technology  
U.S. House of Representatives**

**July 17, 2009**

Thank you for the opportunity to submit this statement. I regret that I was unable to participate in your June 17<sup>th</sup> meeting due to prior congressional commitments, and I look forward to meeting with you in person at a later date if you are interested in doing so.

You have asked for a congressional perspective on the human spaceflight-related policies of the NASA Authorization Acts of 2005 and 2008 [P.L. 109-155 and P.L. 110-422, respectively]. I think that the most appropriate way to view the human spaceflight-related provisions of both Acts is in the context of the overall goals of the legislation, namely, to promote a balanced and robust program of space and aeronautics initiatives at the National Aeronautics and Space Administration and to authorize funding levels commensurate with the tasks that NASA is being asked to undertake. It was the consensus of Congress in its consideration of those Acts that human space flight and exploration is an important component of a balanced NASA portfolio, as well as being in the national interest for geopolitical, technological, scientific, and inspirational reasons. In that regard, I would quote Finding #1 of P.L. 110-422: *"NASA is and should remain a multimission agency with a balanced and robust set of core missions in science, aeronautics, and human space flight and exploration."*

With respect to human space flight and exploration, both the 2005 and 2008 Authorization Acts represent a congressional consensus on the importance of completing the International Space Station [ISS] and ensuring its productive utilization in support of research and development activities required for exploration beyond low Earth orbit, as well as basic and applied R&D that could have terrestrial benefits. With respect to the question of what the operational lifetime of the ISS should be, Congress states the following in Section 601 of the NASA Authorization Act of 2008:

*"(a) In General.—The Administrator shall take all necessary steps to ensure that the International Space Station remains a viable and productive facility capable of potential United States utilization through at least 2020 and shall take no steps that would preclude its continued operation and utilization by the United States after 2015."*

In addition, Sec. 601(b) emphasizes the importance of effective utilization of the ISS by directing that the NASA Administrator submit *"...a plan to support the operations and utilization of the International Space Station beyond fiscal year 2015 for a period of not less than 5 years."* Thus, while Congress does not explicitly mandate the

continuation of the ISS program past 2015 in P.L. 110-422, I believe that the aforementioned provisions reflect a congressional consensus that the productive utilization of the ISS is an important national goal, and the ISS program should not be constrained to an arbitrary termination date.

That said, Congress recognizes that productive operation and utilization of the ISS will be challenging once the Space Shuttle is retired following the completion of its flight manifest. While Congress is very supportive of NASA's plans to use commercial cargo resupply services once they are developed, Congress also wants NASA to have contingency arrangements in place, including international partner resupply capabilities, so that the nation's utilization of the ISS is not jeopardized. Thus, Sec. 603 of P.L. 110-422 includes a provision that states:

*"The Administrator shall develop a plan and arrangements, including use of International Space Station international partner cargo resupply capabilities, to ensure the continued viability and productivity of the International Space Station in the event that United States commercial cargo resupply services are not available during any extended period after the date that the Space Shuttle is retired."*

One of the great accomplishments—and strengths—of the International Space Station program has been the durable international partnership that has developed over the program's lifetime, and we believe that anything that can be done by the partnership to increase the post-Shuttle resiliency of the ISS should be encouraged.

It is an unfortunate policy failure that there will be a gap between the retirement of the Space Shuttle and commencement of operations of the follow-on Constellation space transportation system. However, at this point there do not appear to be really good options available that would obviate such a gap. Congress in the NASA Authorization Act of 2008 makes clear that it considers the most appropriate approach to be development of the follow-on Constellation systems as soon as possible with the goal of providing a system that can both service the ISS until other capabilities become available and support human exploration beyond low Earth orbit. As is stated in Finding #8 of P.L. 110-422:

*"Developing United States human space flight capabilities to allow independent American access to the International Space Station, and to explore beyond low Earth orbit, is a strategically important national imperative, and all prudent steps should thus be taken to bring the Orion Crew Exploration Vehicle and Ares I Crew Launch Vehicle to full operational capability as soon as possible and to ensure the effective development of a United States heavy lift launch capability for missions beyond low Earth orbit."*

In support of that position, Congress authorizes an additional \$1 billion dollars in P.L. 110-422 above the President's FY 2009 request to accelerate the initial operating capability of the Orion Crew Exploration Vehicle and Ares I Crew Launch Vehicle.

Congress is committed to the success of those development projects and wants to ensure that they are brought to operational status in an effective and efficient manner. I thus believe that the threshold for any decision to deviate from the projects of record at this point in their development should be high, e.g., major technical feasibility issues, prohibitive cost growth/schedule delays, or unacceptable safety risk.

It is important to note that both the 2005 and 2008 Authorization Acts make clear that Congress does not view the primary objective of the human space flight program to be just having the capability for Americans to access low Earth orbit, or the two pieces of legislation would not place the emphasis that they do on developing systems to support human missions *beyond* low Earth orbit, as referenced in both the above-mentioned sections and in Title IV of P.L. 110-422. Thus, if it is determined that adjustments are required to the Constellation program of record, priority should be given to timely development of a transportation capability for enabling human missions to the Moon and other destinations beyond low Earth orbit and for ensuring NASA's ability to access the ISS as needed.

Furthermore, while Sec. 902 of P.L. 110-422 seeks to stimulate the development of a commercial crew transportation capability in the United States, the congressional motivation for development of such a capability was not elimination of the post-Shuttle "gap" over the near term—there was no consensus on that matter when the legislation was being considered by Congress. In addition, Congress is quite clear in Sec. 902(b) of the Act as to the relative priority to be given to federal support of a commercial crew initiative versus funding for NASA's Constellation program:

*"(b) Congressional Intent.—It is the intent of Congress that funding for the program described in subsection (a)(4) [i.e., COTS crewed vehicle demonstration program] shall not come at the expense of full funding of the amounts authorized under section 101(3)(A), and for future fiscal years, for Orion Crew Exploration Vehicle development, Ares I Crew Launch Vehicle development, or International Space Station cargo delivery."*

It is clear from the NASA Authorization Acts of 2005 and 2008 that a durable congressional consensus has been achieved on goals and objectives for the nation's human and robotic exploration of the solar system, as well as on the overall approach to be taken. That is a significant accomplishment, and I would hope that your panel will resist the temptation to propose major departures from that hard-won consensus. It should be noted that Congress's direction for the nation's exploration initiative is consistent with the broad goals and objectives of President Bush's Vision for Space Exploration, a Vision that unfortunately was not accompanied by resources sufficient to realize it as originally articulated without doing damage to other important NASA missions.

The congressional consensus on exploration is summarized by the following provisions from P.L. 110-422:

*Finding #7 "Human and robotic exploration of the solar system will be a significant long term undertaking of humanity in the 21<sup>st</sup> century, and it is in the national interest that the United States should assume a leadership role in a cooperative international exploration initiative."*

The legislation elaborates on that Finding in Sections 401 and 402 of the Act:

*Sec. 401: "It is the sense of Congress that the President of the United States should invite America's friends and allies to participate in a long-term international initiative under the leadership of the United States to expand human and robotic presence into the solar system, including the exploration and utilization of the Moon, near Earth asteroids, Lagrangian points, and eventually Mars and its moons, among other exploration and utilization goals. When appropriate, the United States should lead confidence building measures that advance the long-term initiative for international cooperation."*

*Sec. 402: "Congress hereby affirms its support for—*

- (1) the broad goals of the space exploration policy of the United States, including the eventual return to and exploration of the Moon and other destinations in the solar system and the important national imperative of independent access to space;*
- (2) the development of technologies and operational approaches that will enable a sustainable long-term program of human and robotic exploration of the solar system;*
- (3) activity related to Mars exploration, particularly for the development and testing of technologies and mission concepts needed for eventual consideration of optimal mission architectures, pursuant to future authority to proceed with the consideration and implementation of such architectures; and*
- (4) international participation and cooperation, as well as commercial involvement in space exploration activities.*

With respect to the implementation of the nation's exploration initiative, both the 2005 and 2008 NASA Authorization Acts emphasize the importance of the Moon as a stepping stone for exploration as well as a potential venue for utilization activities. In that regard, Section 403 of P.L. 110-422 states:

*"In order to maximize the cost-effectiveness of the long-term exploration and utilization activities of the United States, the Administrator shall take all necessary steps, including engaging international partners, to ensure that activities in its lunar exploration program shall be designed and implemented in a manner that gives strong consideration to how those activities might also help meet the requirements of future exploration and utilization activities beyond the Moon. The timetable of the lunar phase of the long-term international exploration initiative shall be determined by the availability of funding. However, once an exploration-related project enters its development phase, the*

*Administrator shall seek, to the maximum extent practicable, to complete that project without undue delays."*

In addition, while Congress is on record in the 2005 NASA Authorization in support of development of a sustained U.S. human presence on the Moon, Congress wants to maintain flexibility and resiliency with respect to the nation's lunar activities. Thus Section 404(a) of P.L. 110-422 states:

*"As NASA works toward the establishment of a lunar outpost, NASA shall make no plans that would require a lunar outpost to be occupied to maintain its viability. Any such outpost shall be operable as a human-tended facility capable of remote or autonomous operation for extended periods."*

While there are a number of other important provisions related to human space flight and exploration contained in the NASA Authorization Acts of 2005 and 2008, I will not dwell on them here and instead would refer you to those Acts. However, among them are four considerations that I would highlight that Congress believes need attention in the nation's conduct of its human exploration initiative. First, as Section 405 of the 2008 Act concludes: *"A robust program of long-term exploration-related research and development will be essential for the success and sustainability of any enduring initiative of human and robotic exploration of the solar system."* Such non-flight project-specific technology development activities have withered at NASA and need to be revitalized. They should be viewed as intrinsic to NASA's exploration effort and its mission as a cutting-edge R&D agency, and they should be robustly funded.

Second, Congress believes that a well-executed exploration program can have significant inspirational and educational benefits. However, the public needs to become engaged for those benefits to be realized. Section 408 [*"Participatory Exploration"*] of P.L. 110-422 represents an initial attempt by Congress to encourage increased public engagement in the nation's human and robotic exploration activities by leveraging technologies in the Constellation systems that can deliver a rich multimedia experience to the public. In addition, Congress believes that the ISS can provide additional opportunities for educational outreach.

Third, Congress believes that NASA should coordinate, where practical, its science and exploration activities to capture the synergies between them. The goal of the coordination should be to maximize the success of the human exploration initiative *and* to further our understanding of the universe.

Fourth, one of the broad benefits to the nation of a robust exploration program can be the engagement and encouragement of the commercial sector to the extent practicable. NASA is already undertaking initiatives in that regard in its overall human space flight program, but Congress is encouraging NASA to also look for opportunities to support its planned activities beyond low Earth orbit, such as with respect to the lunar outpost.

In conclusion, there now exists a broad congressional consensus on appropriate goals, objectives, and implementation strategies for NASA's human space flight and exploration activities, as reflected in the NASA Authorization Acts of 2005 and 2008. It is now time to ensure that all appropriate steps are taken to maximize the probability of success in achieving those goals and objectives through the projects that are currently under development. That will require a steadfastness of purpose, and I am encouraged that Congress has achieved a durable consensus that I hope will be matched by the Administration once your review has been completed. It will also require resource commitments commensurate with the tasks that the nation is asking NASA to undertake—we should not pretend that such challenging goals can be achieved “on the cheap”. That approach has already been tried, and it has been proved wanting. I hope that your review will provide a clear understanding of what will be required if America is to retain its leadership in human space flight by undertaking the challenging initiatives called out in the NASA Authorization Acts of 2005 and 2008.

I would be happy to discuss any of these matters in further detail if you would like to do so.